

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons which follow.

After amending the claims as set forth above, claims 1-20 remain pending in this application.

Rejection under 35 U.S.C. 102

In Section 5 of the Office Action, claims 7, 8, 11, 13-15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,156,485 (Tang et al.). Applicants respectfully traverse the rejection. Tang et al. fails to disclose the Applicants' claimed invention as recited in claims 7, 8, 11, 13-15, and 17, as amended herein.

Claims 7, 8, 11, and 13 recite "patterning the gate material layer including selectively etching the mask layer and trim etching the reflective metal layer." (See independent claim 7.) Claims 14, 15, and 17 require "patterning a gate structure in the gate material layer by selectively removing portions of the resist layer, ARC layer, reflective layer, and gate material layer, wherein portions of the reflective layer are removed using trim etching." (See independent claim 14.) The Examiner states in Section 7 that:

Tang et al. fail to teach the steps of providing a gate material layer comprising polysilicon and trim etching the anti-reflective coating to form a pattern, wherein said trim etching comprises isotropic etching.

(See bottom of page 3, Office Action, dated 9/19/02.)

Indeed, Tang et al. does not provide a gate material layer and trim etch a reflective layer to form a pattern. Accordingly, a rejection of claims 7, 8, 11, 13-15, and 17 under 35 U.S.C. 102(e) is not proper because each and every claim limitation is not disclosed by Tang et al. Applicants respectfully request withdrawal of the rejection.

Rejection under 35 U.S.C. 103

In Section 6 of the Office Action, claims 1-6, 9, 10, 16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. in view of U.S. Patent No. 5,804,088 (McKee). Applicant respectfully traverses the rejection. Tang et al. and McKee (alone or in combination) fail to disclose, suggest, or teach the Applicants' claimed invention as recited in claims 1-6, 9, 10, 16, and 18-20, as amended herein.

Claims 1-6 recite: "trim etching the reflective metal material layer according to the pattern." (See independent claim 1.) Claim 10 recites: "patterning the gate material layer including selectively etching the mask layer and trim etching the reflective metal layer." (See independent claim 7.) Claims 16 and 18-20 recite: "patterning a gate structure in the gate material layer by selectively removing portions of the resist layer, ARC layer, reflective layer, and gate material layer, wherein portions of the reflective layer are removed using trim etching." (See independent claim 14.)

As described by Applicants in paragraph [0035] of the present application: "Referring to FIGURE 3, an isotropic etch is applied to remove portions of reflective metal layer 214. In an exemplary embodiment, a trim etch technique is employed to undercut ARC layer 216." Thus, reflective metal layer 214 is trim etched in the fabrication process described by the Applicants.

As noted above, the Examiner indicates that Tang et al. does not disclose, suggest or teach providing a gate material layer and trim etching to form a pattern. (See Section 7 of the Office Action.) Examiner points to McKee to provide this missing teaching. However, McKee fails to disclose a reflective metal layer and an anti-reflective coating (ARC) where the **reflective metal layer** is trim etched. In contrast, McKee teaches that a buried antireflective coating (BARC) is trim etched. There is no suggestion or teaching by Tang et al. or McKee of trim etching a reflective metal layer. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1-6, 9, 10, 16, and 18-20 under 35 U.S.C. 103(a).

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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MARKED UP VERSION SHOWING CHANGES MADE

In the Claims:

1. (Once Amended) A method of fabricating an integrated circuit, the method comprising:

depositing a reflective metal material layer over a layer of polysilicon;

depositing an anti-reflective coating over the reflective metal material layer;

[trim] etching the anti-reflective coating to form a pattern;

trim etching the reflective metal material layer according to the pattern;
and

removing portions of the polysilicon layer using the pattern formed from the removed portions of anti-reflective coating.

7. (Once Amended) A method of optimizing optical properties of gate patterning to control gate size in an integrated circuit fabrication process, the method comprising:

providing a reflective metal layer over a gate material layer;

providing a mask layer over the reflective metal layer; and

patterning the gate material layer including selectively etching the mask layer and trim etching the reflective metal layer.

14. (Once Amended) A method of forming a gate in an integrated circuit, the method comprising:

providing a gate material layer;

providing a reflective metal layer over the gate material layer;

providing an anti-reflective coating (ARC) layer over the reflective metal layer;

providing a resist layer over the ARC layer; and

patterning a gate structure in the gate material layer by selectively removing portions of the resist layer, ARC layer, reflective layer, and gate material layer, wherein portions of the reflective layer are removed using trim etching.